

# ODONTOGENIC PURULENT INFLAMMATION, CELLULITIS (PHLEGMONE), SPACES OF THE MAXILLOFACIAL REGION

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# OUTLINE

- Types and reasons of inflammations
- Symptoms and diagnostic possibilities
- Conservative treatment methods
- Surgical treatment methods
- Cellulitis (symptoms and treatment)
- Osteomyelitis
- Bisphosphonate related osteonecrosis of the jaw (BRONJ)

# TYPES OF INFLAMMATIONS

- Acute soft tissue inflammations: abscess, cellulitis (acute exacerbation of chr. inflammations)
- Chronic inflammations: remain bacteriums among granuloma
- Bone inflammations: osteomyelitis

# THE ORIGIN OF INFLAMMATIONS

- **Dental origin (~95%):**
  - caries→pulpitis (gangrene pulp)→acute periapical periodontitis (chr. periapical lesions) → ostitis → abscess → cellulitis
  - postoperative period, parodontopathies(periodontitis), cysts, non erupted teeth
- **Other reasons:**
  - Sialoadenitis
  - Lymphadenitis
  - neck cysts
  - injuries of the skin or the mucosa, furuncle, pyoderm,
  - untreated fractures
  - sinusitis (mycotic infection-aspergillois, mucor mycosis)
  - surgical interventions

# PATHWAYS OF INFECTION

caries

pulpitis

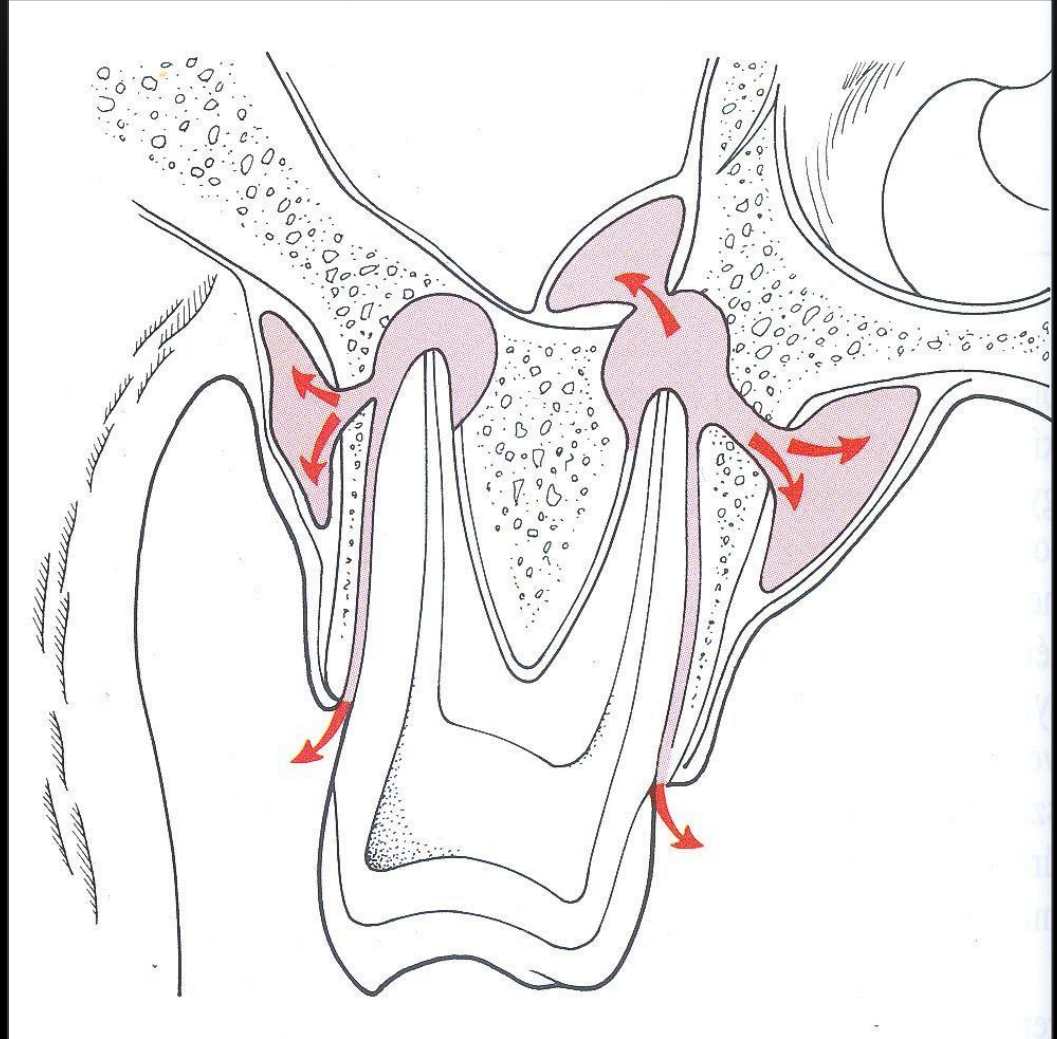
periap. periodon

titis ostitis

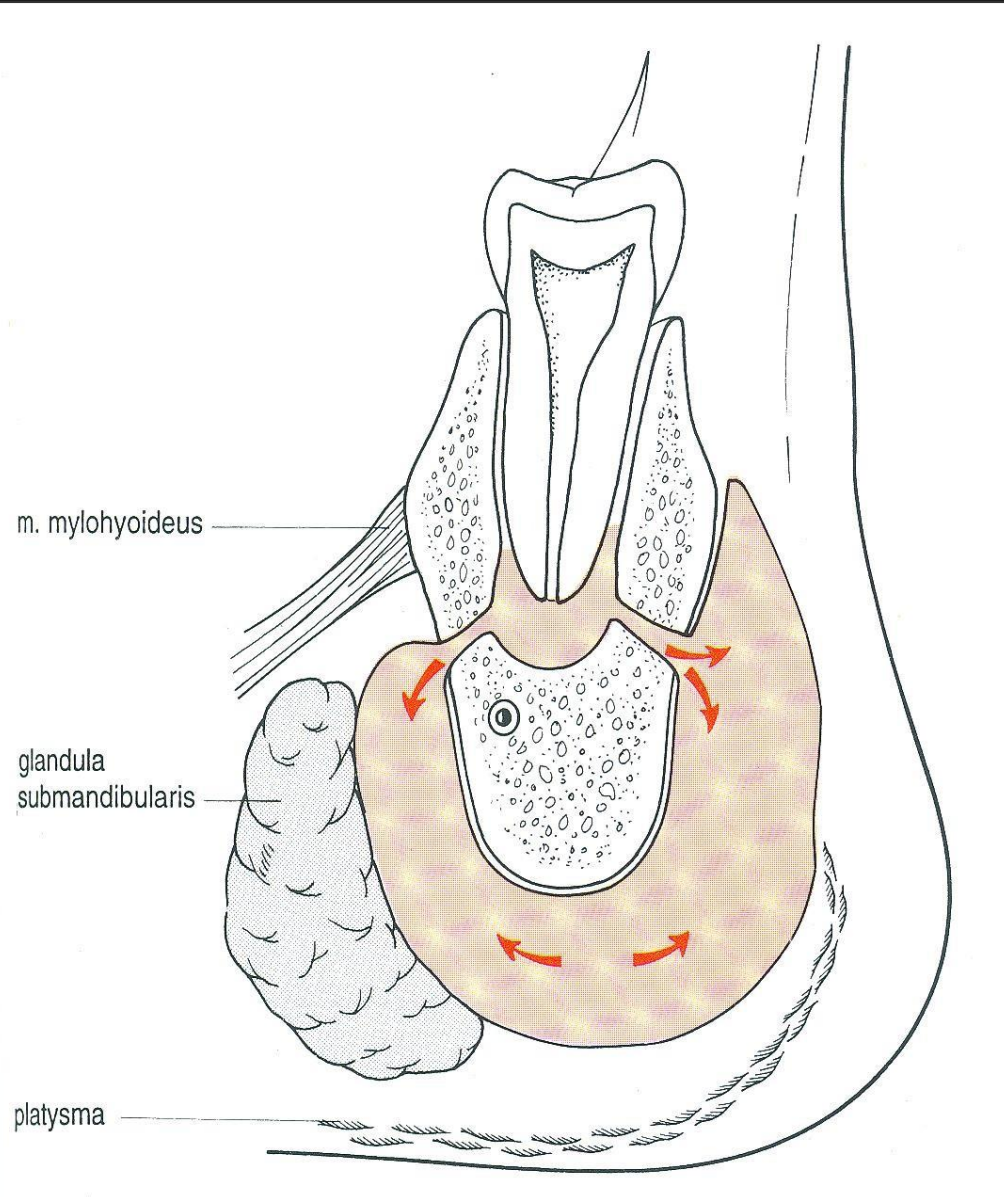
subperiosteal  
abscess

submucosal/sube  
pith.

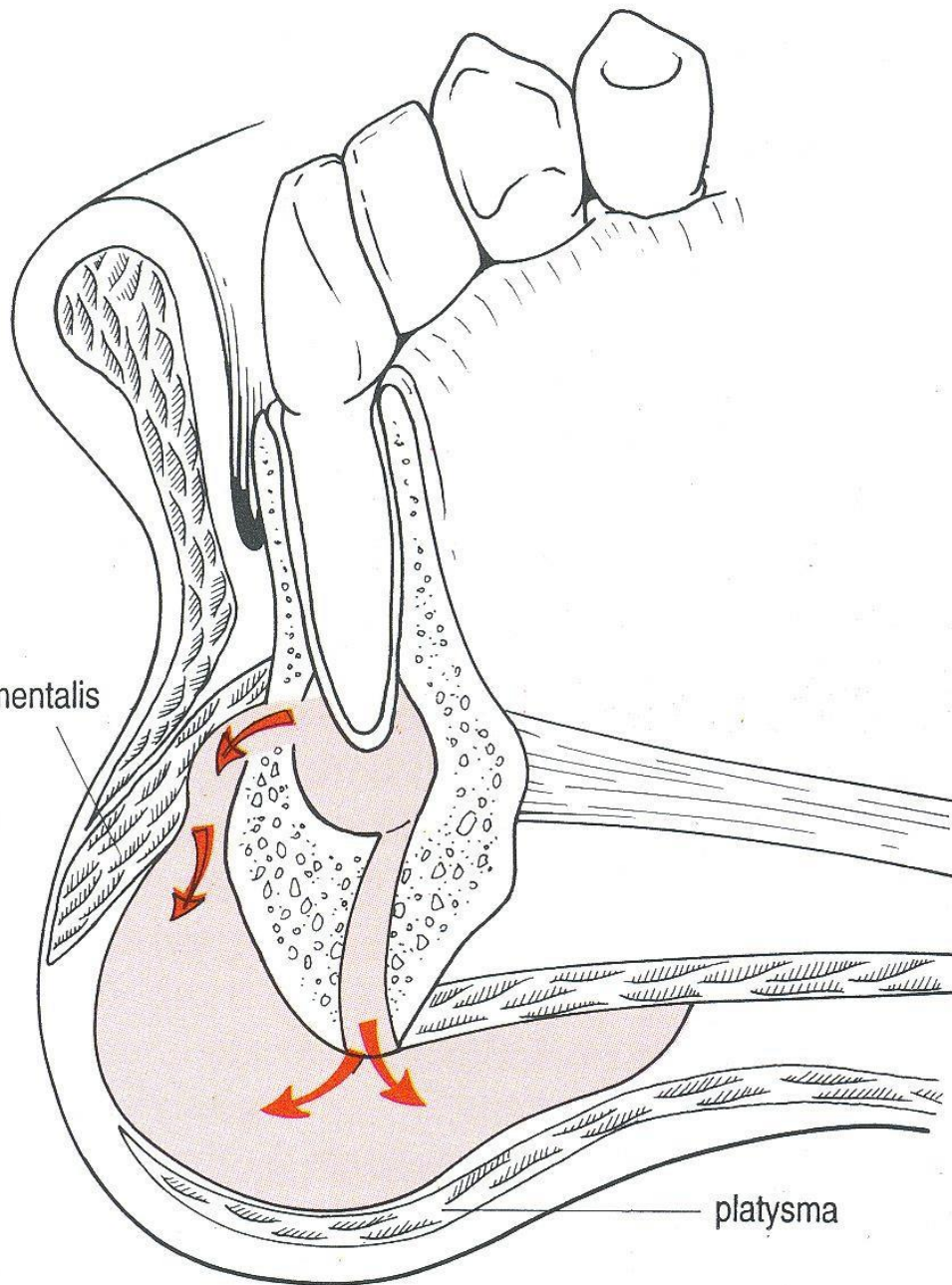
abscess/cellulitis



# PERIMANDIBULAR ABSCESS



m. mentalis



platysma

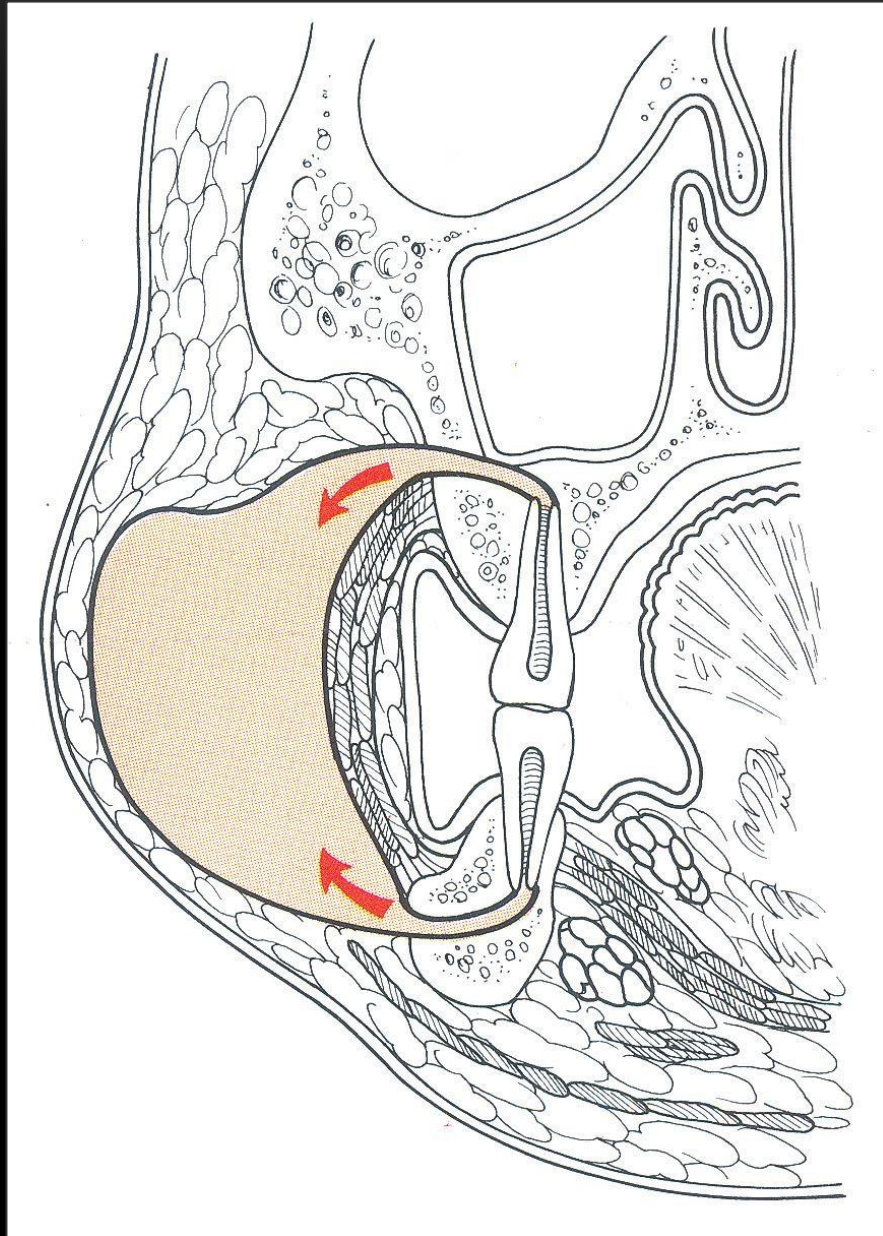


**Bucca**

**|**

**absce**

**ss**





# CAUSATIVE AGENTS

- Mainly monoinfections, in most cases: Staphylo-, Streptococcus
- Sometimes Gram negative: Enterobacter, Pseudomonas aeruginosa, E. coli, anaerobics
- In the case of severe infections, specimen for bacteriology, antibiogramm is absolutely necessary

# SYMPTOM

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- Swelling /fluctuation?/
- Angry red coloured skin/mucosa
- Fever/in the case of abscess „septic ~” kind of fever/
- Pain
- Mouth closure, swallow problems, speech problems, breath problems
- Bad general condition
- Deviation of blood test, CRP↑- in cellulitis

# DIAGNOSTIC POSSIBILITIES

- Anamnesis: (~48-72h abscess formation) tooth, salivary gland, lymph node
- Clinical examination: swollen, deep caries, tooth sensitivity to temperature and pressure change
- Punction (purulent?) – microbiological exam.
- X-rays
- Ultrasound! – localization, extension, salivary glands? stones?
- (CT, MR) – in serious cases (parapharyngeal expansion)

# TREATMENT POSSIBILITIES

- **Conservative treatment:** (if no pus gathering):  
antibiotics, steam  
dressing, painkillers, mouth gymnastics
- **Surgical treatment:**
  - acute: (if pus gathering): intraoral/extraoral  
incision, drainage
  - definitive surgery: tooth extr., periapical surg.,  
decortication, sequestrectomy

# ANTIBIOTICS

- **Amoxycillin** (+clavulanic acid - Augmentin Duo 1000 mg 2x1 p.os, 2x1.2 g iv., **375 mg, 625 mg - just for children**)
- **Clindamycin** (Dalacin 300 mg 4x1 p.os or iv., **3x300mg or 3-4x 150mg – just for children** )
- Cefalosporins (Ceclo, Zinnat 250 mg, 500 mg 2x1)
- Fluorokinolons (levofloxacin-Tavanic 1x500mg, moxifloxacin-Avelox 1x400mg - in bad cellulitis )
- Metronidazoles (Klion, Supplin 2x500mg) –for anaerobics

# STEAM DRESSING

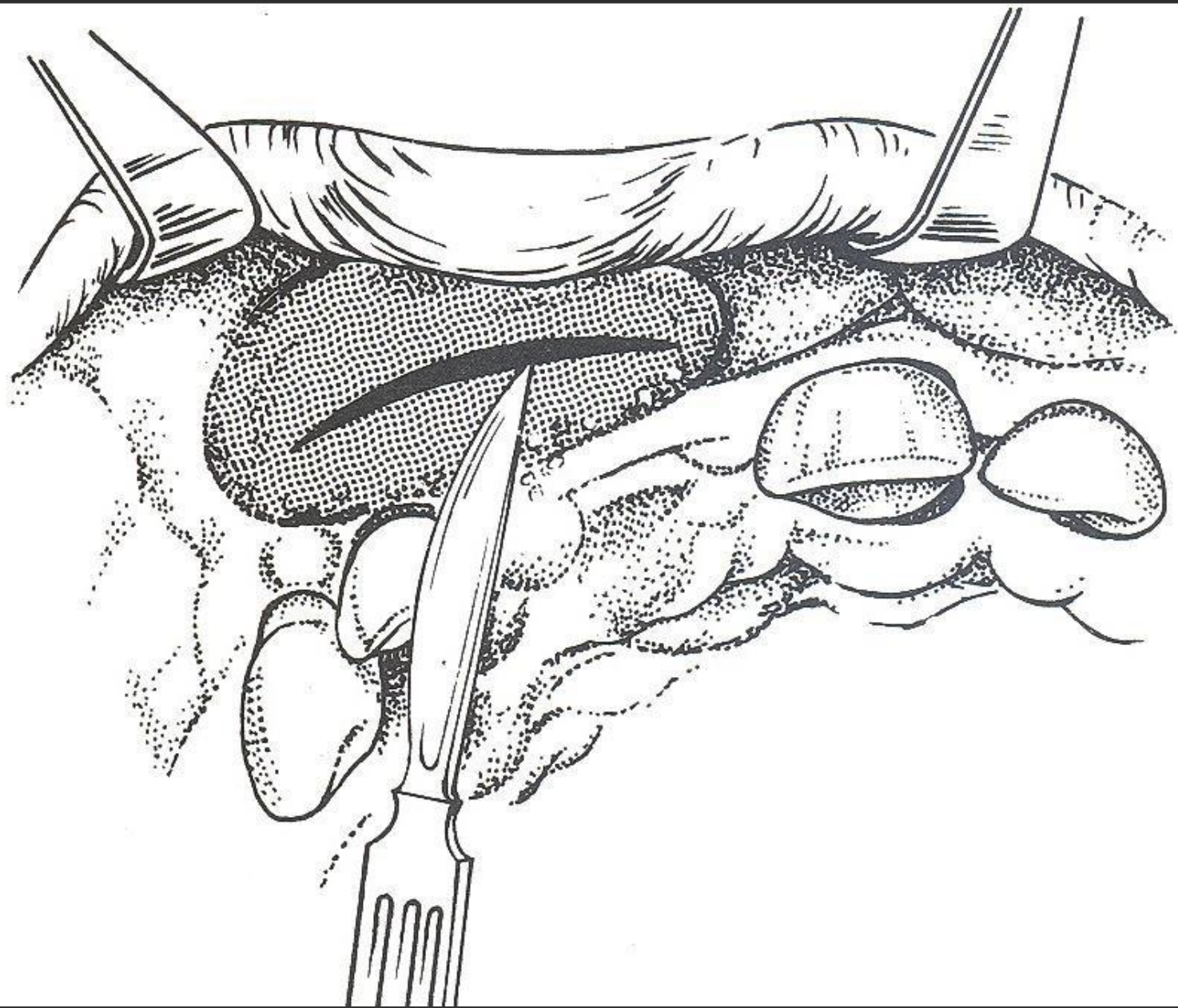
- Dry cotton wool
- Nylon
- Wet cotton wool
- Dry gauze
- Fat cream

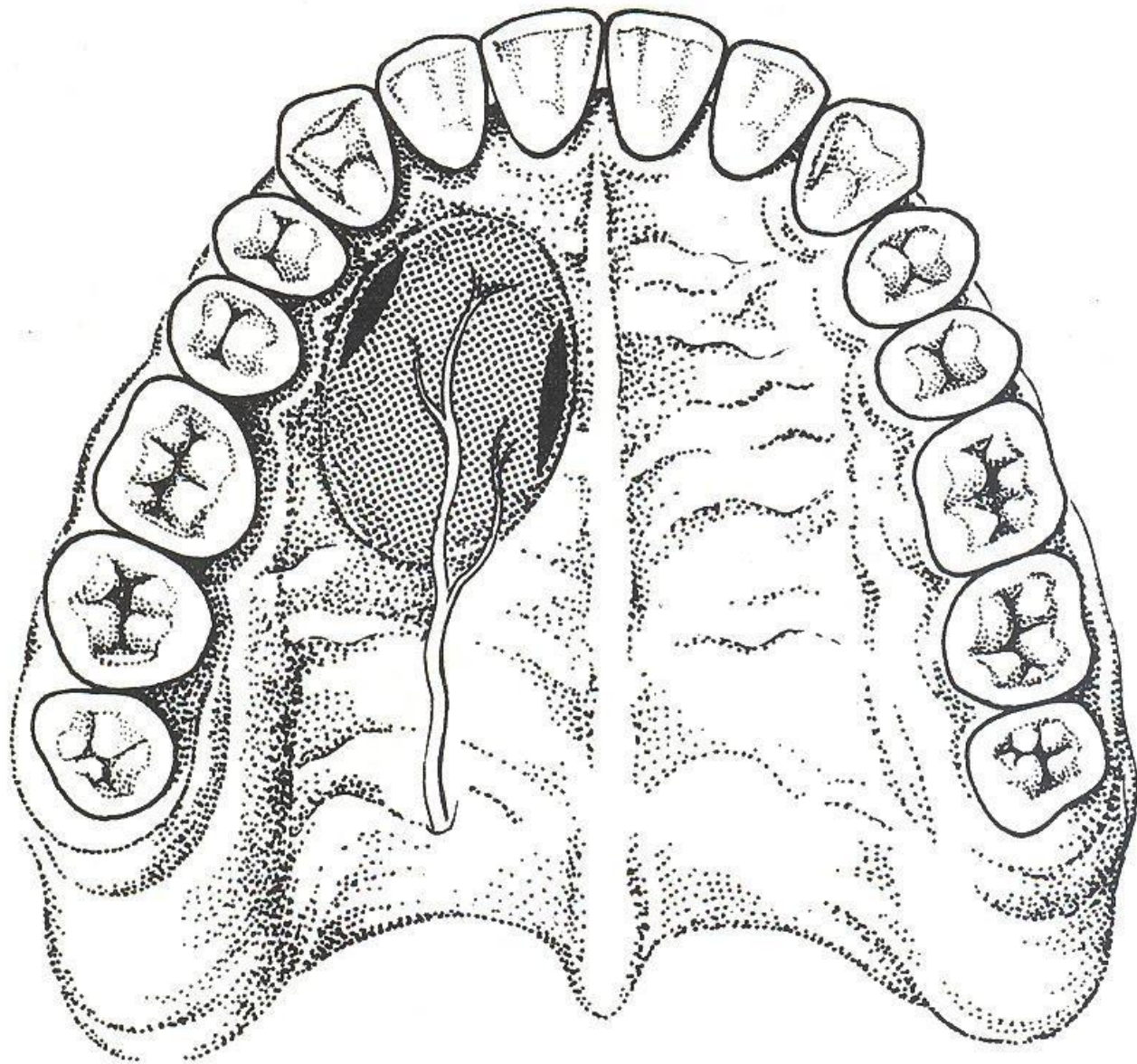


# ASPECTS OF INCISION

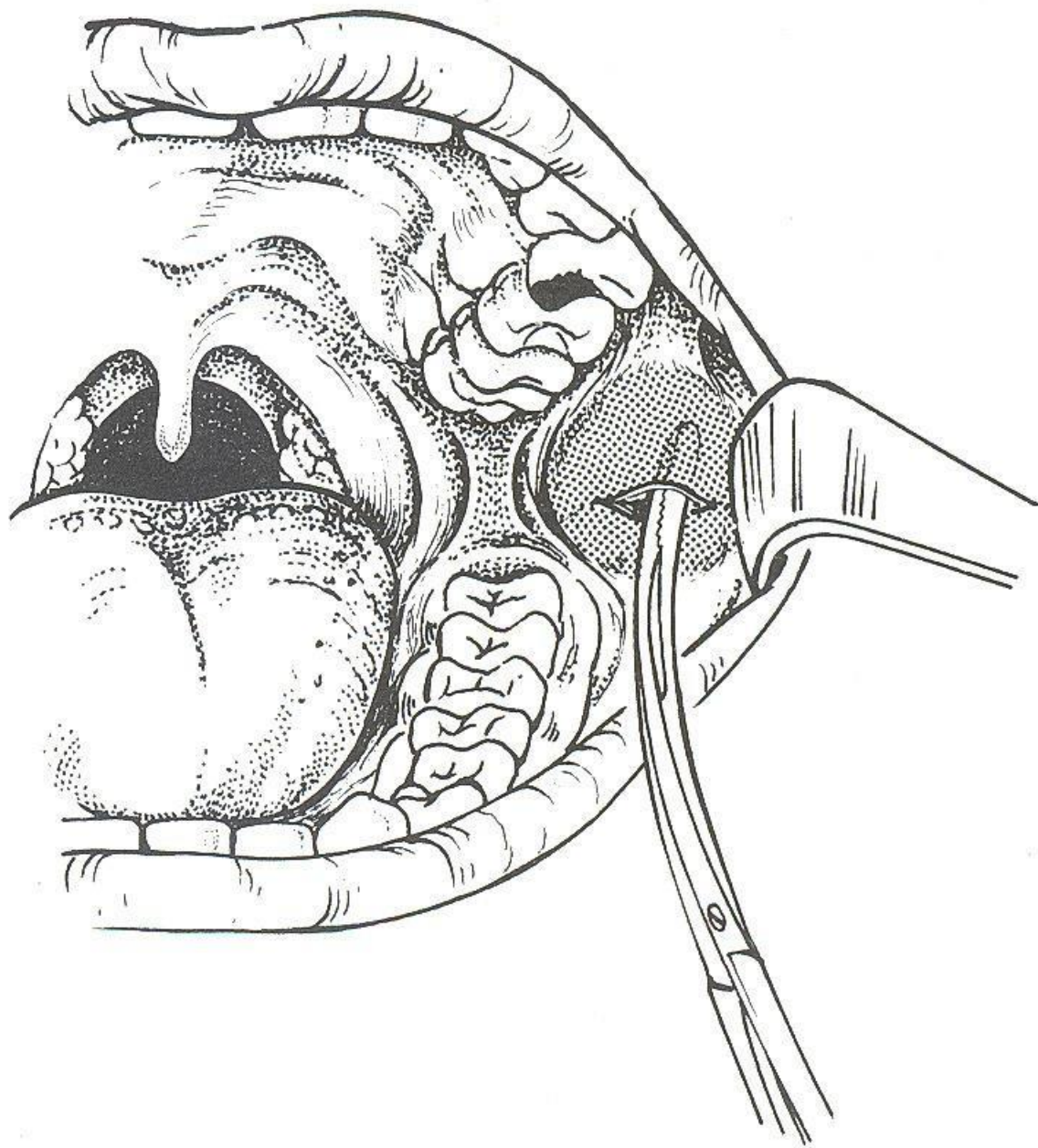
- Possibility of complete outflow of purulent discharge (bigger swell/deepest point)
- Saving important anatomical specimens ( nerv- and wessel branches)
- Esthetic aspects (avoiding disadvantageous scars)

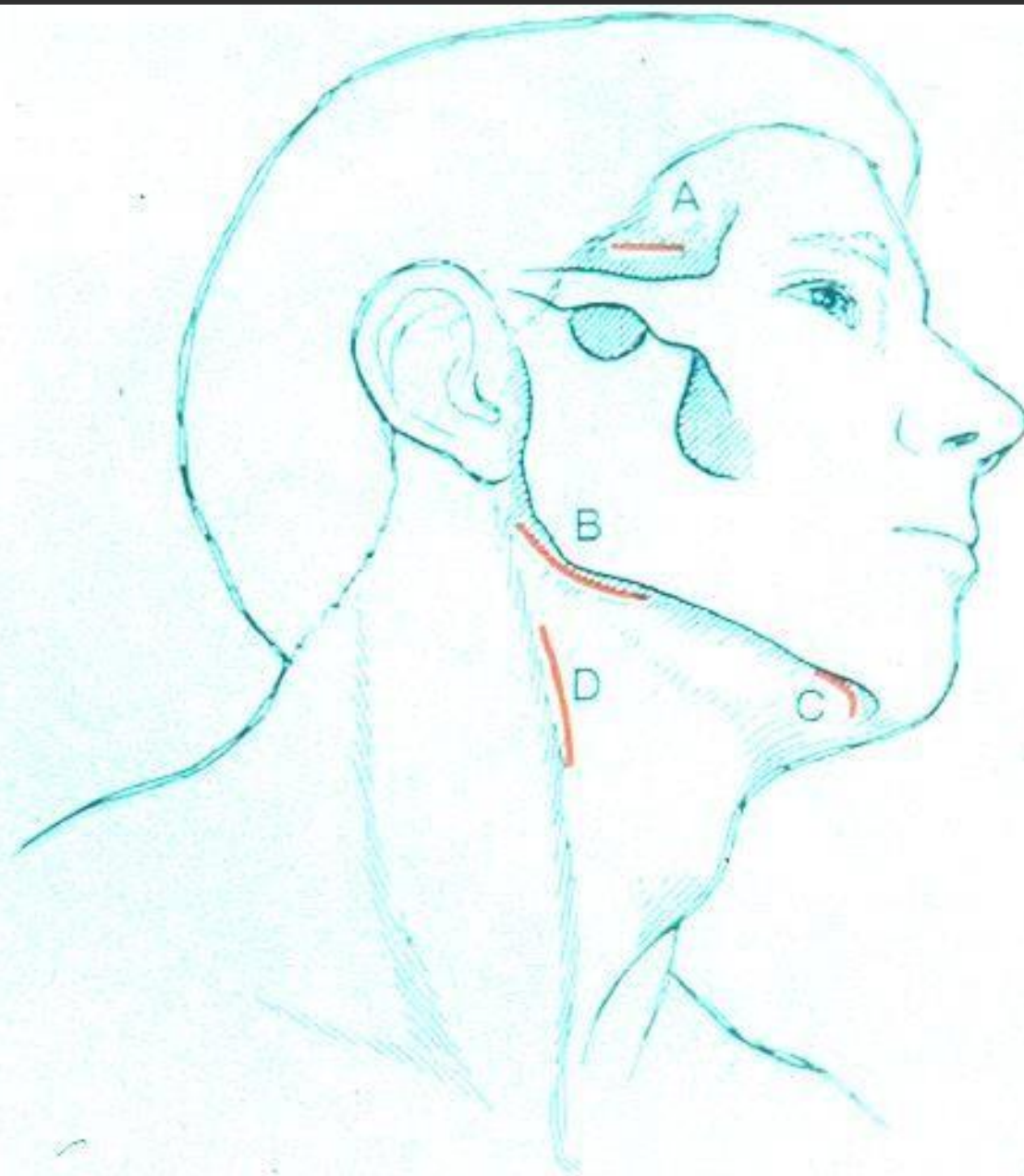


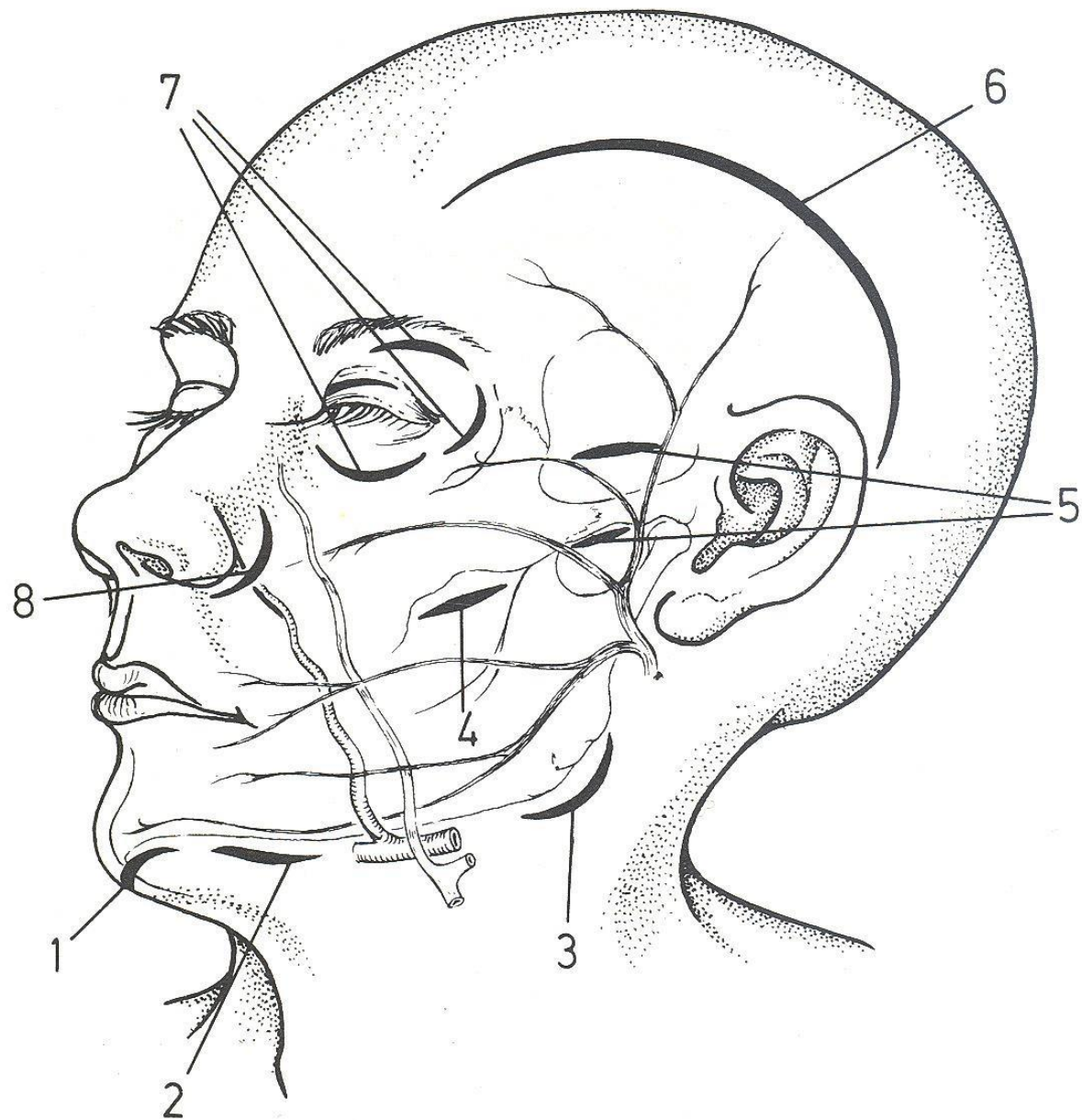






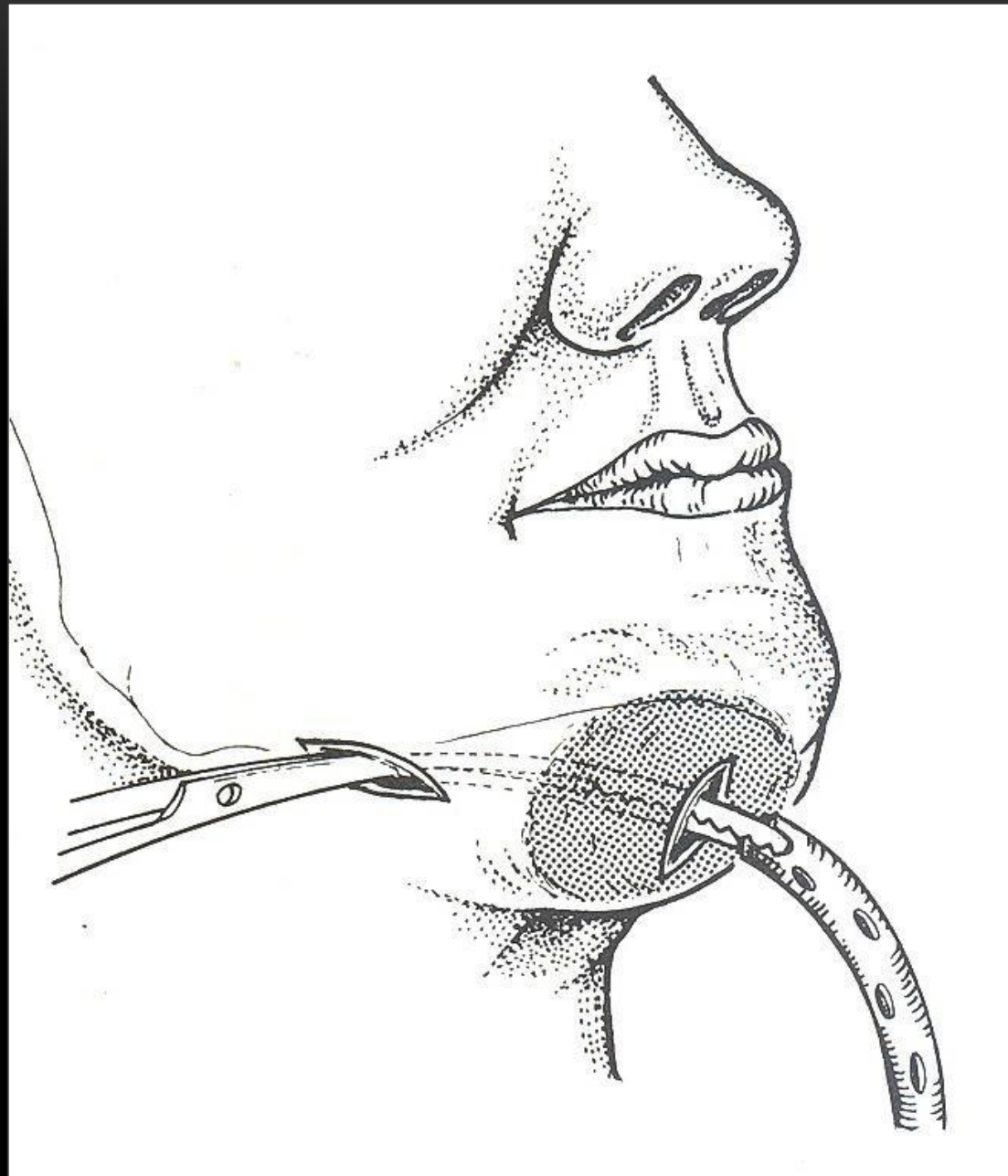




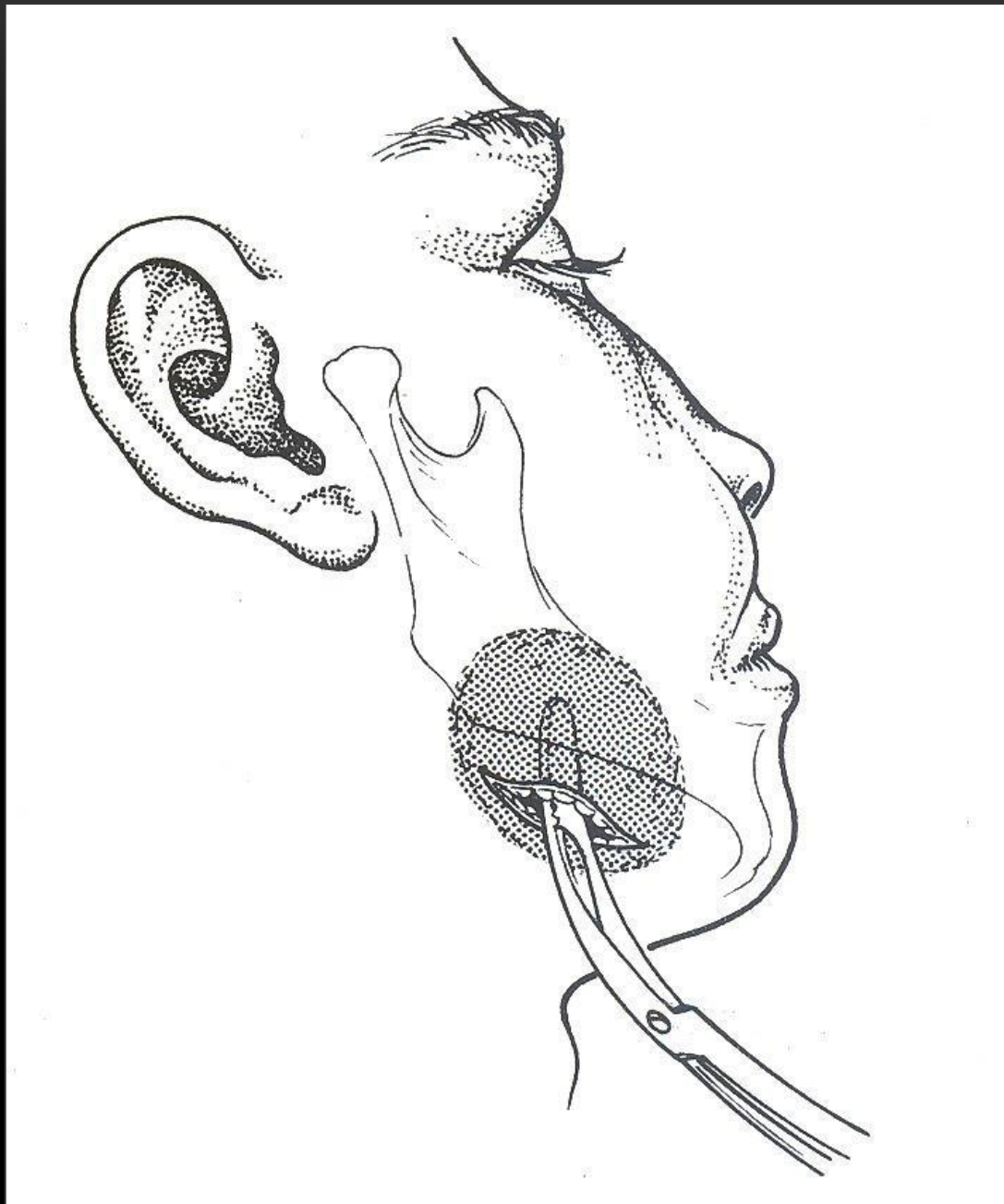


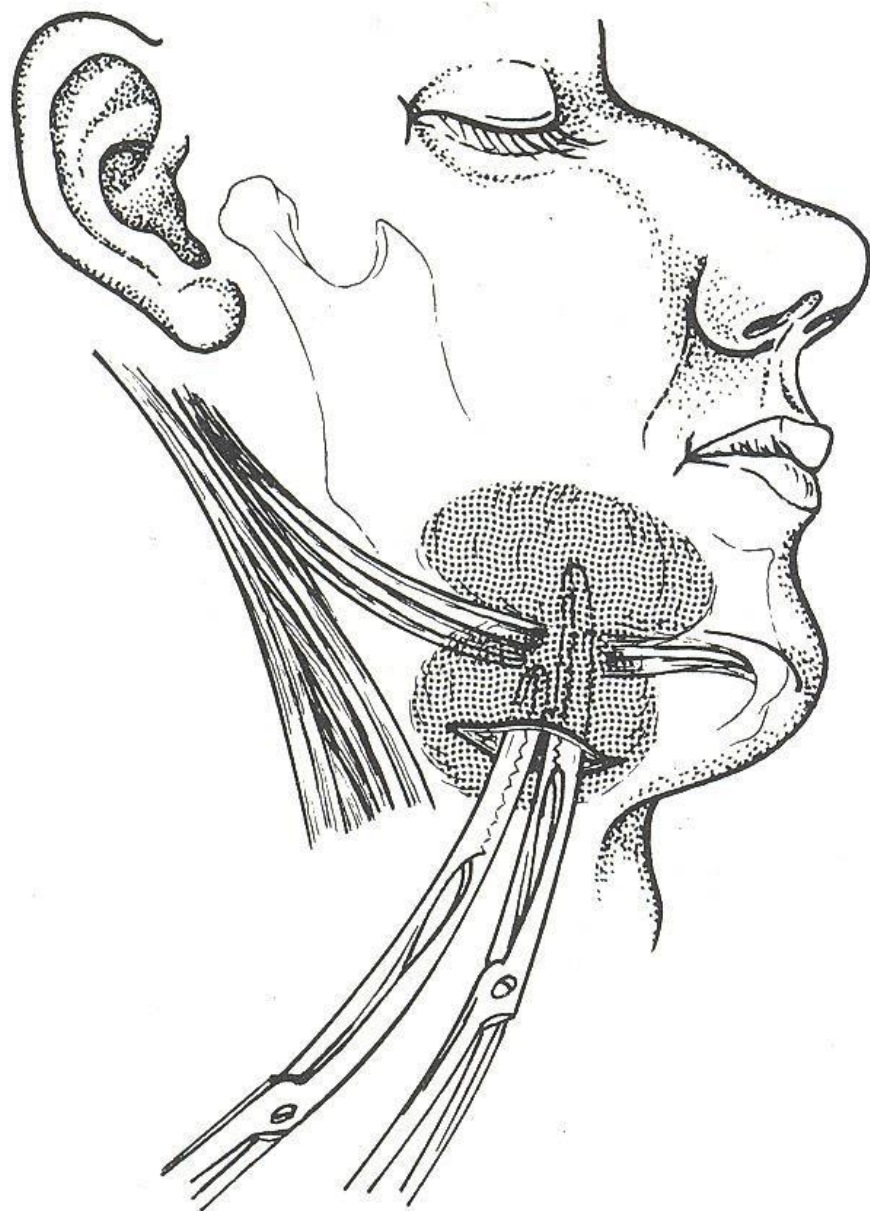


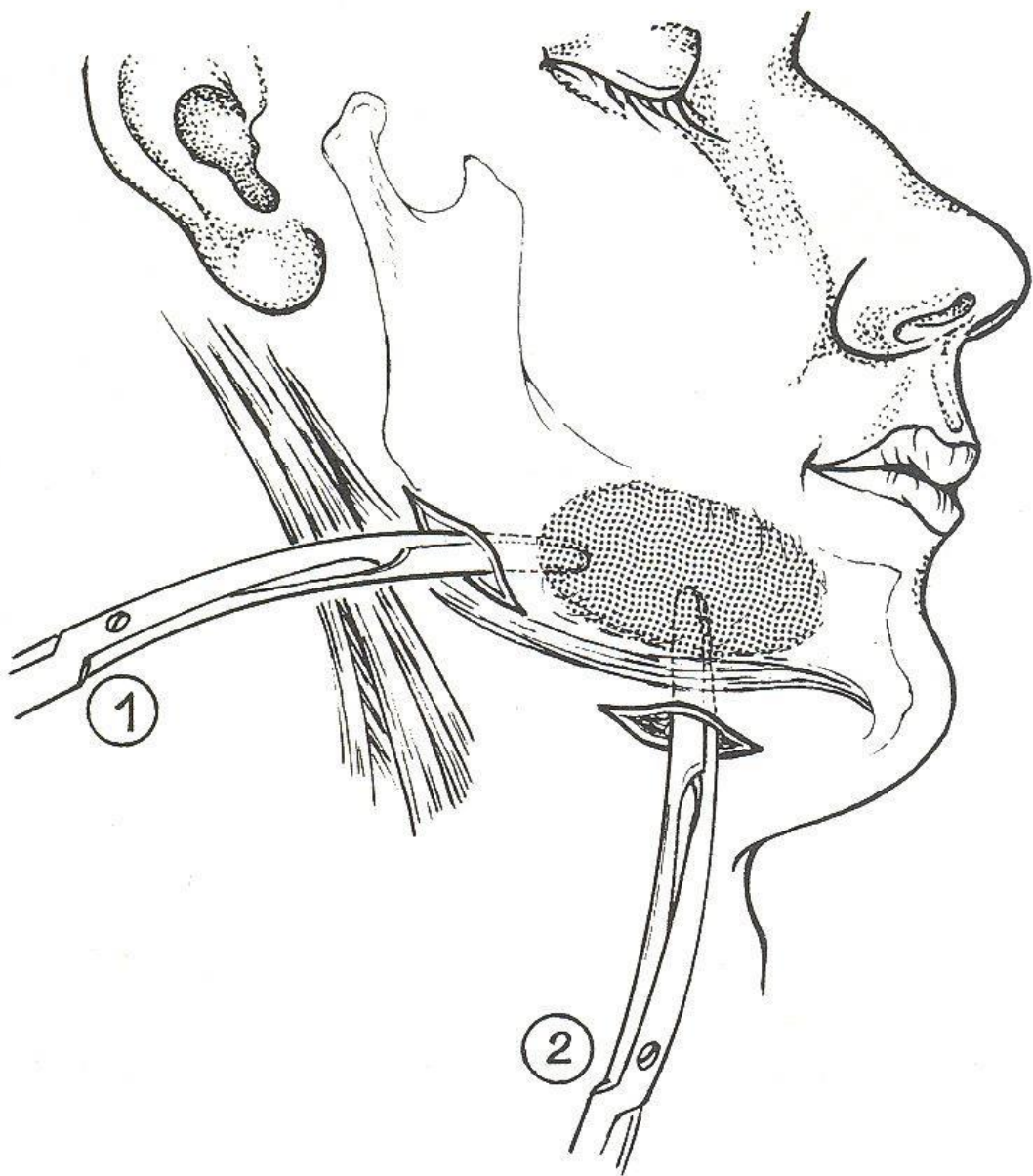


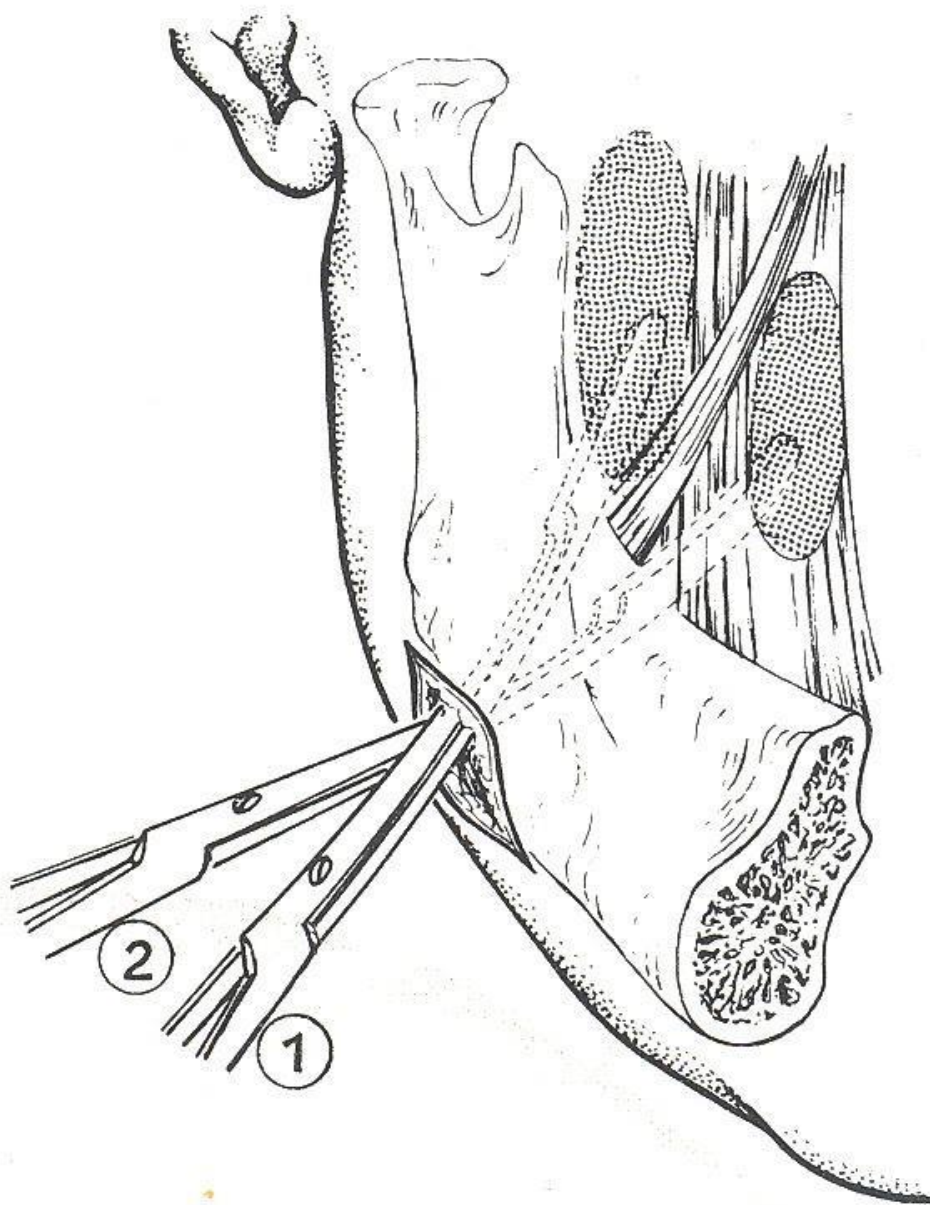








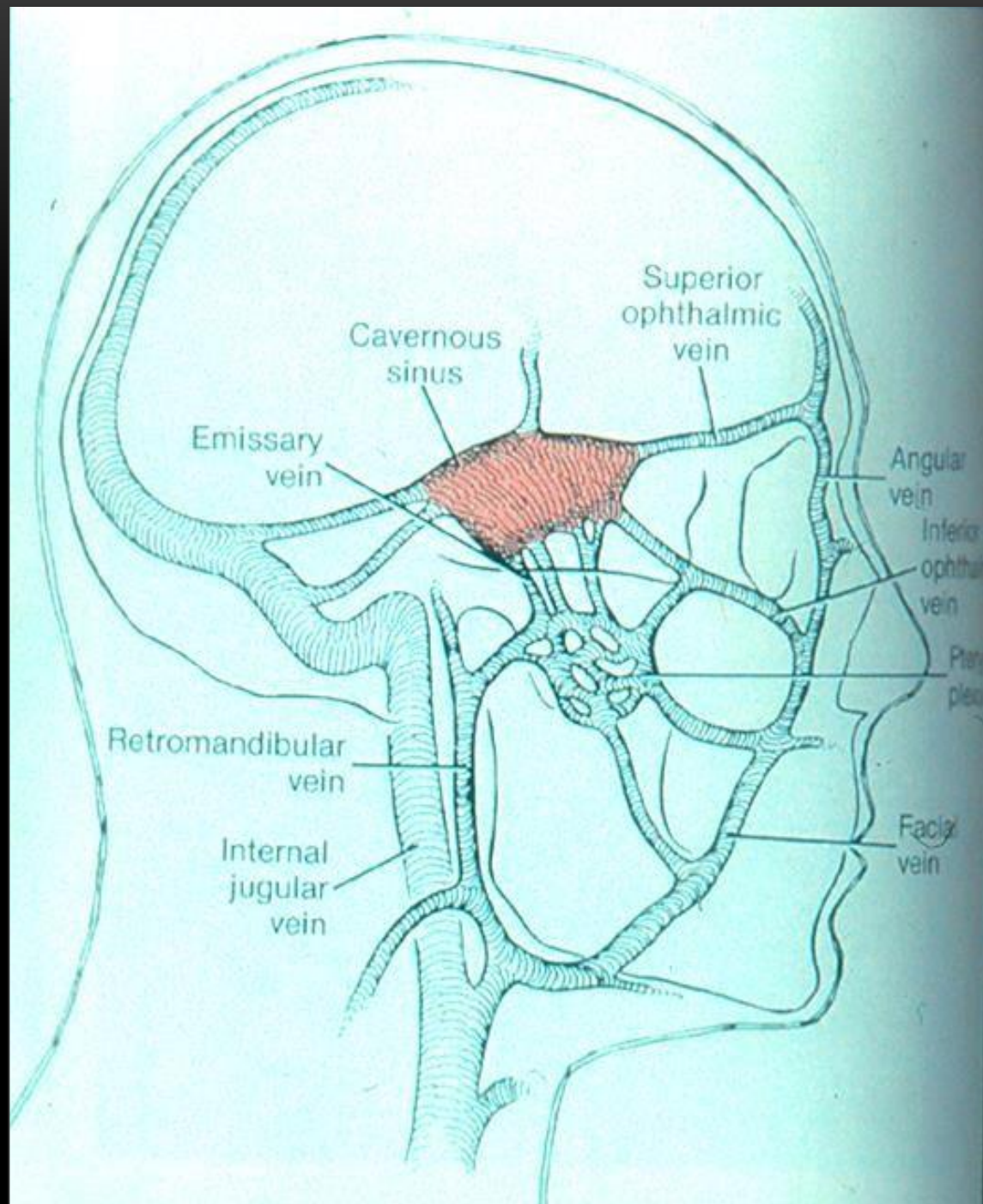


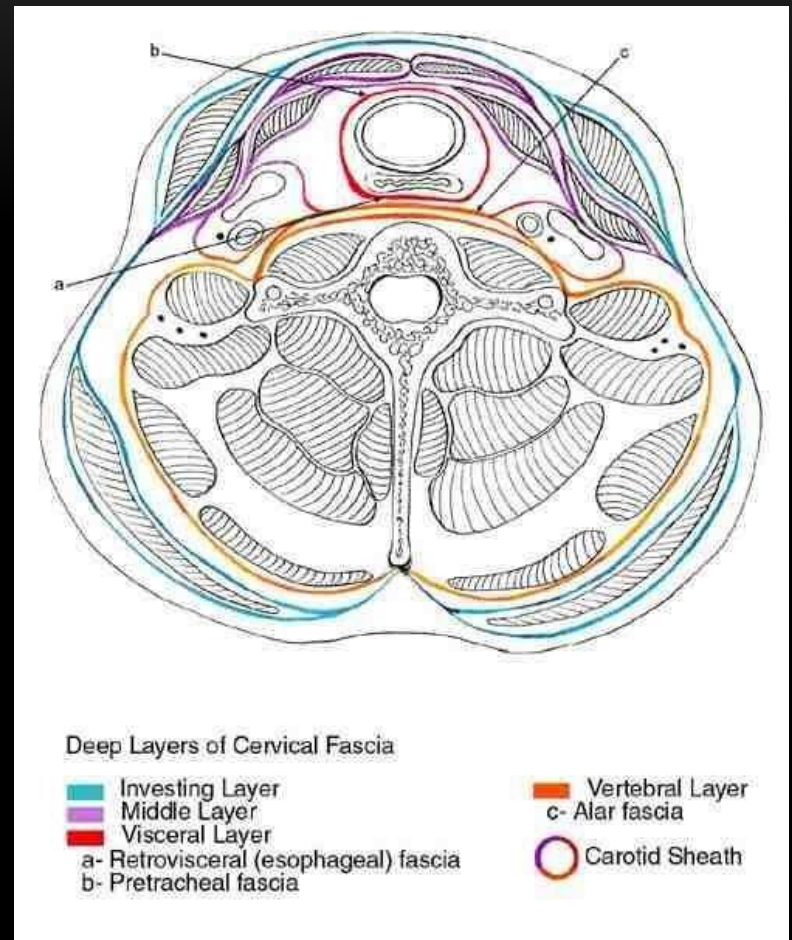
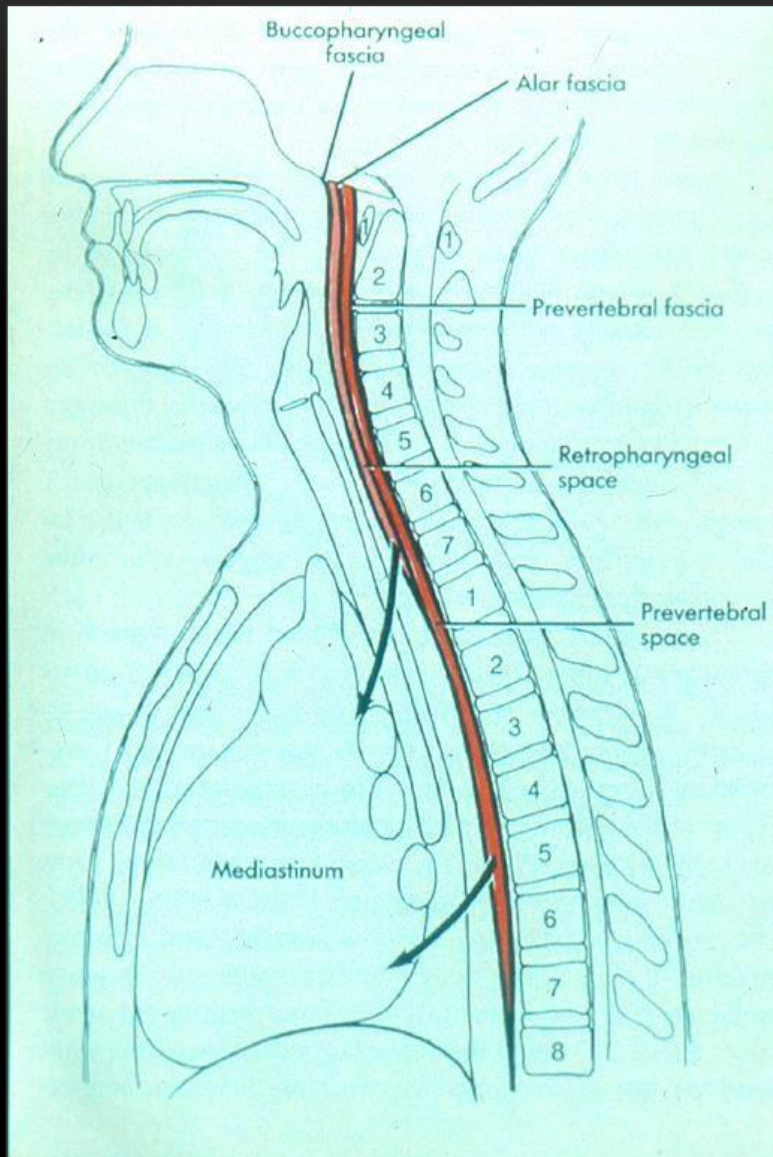


# CELLULITIS I.

- The inflammation is spreading along connective tissue spaces without any border
- General diseases in the background/immunodeficiency?
- Life threatening because of spreading into the mediastinum or the skull, (sepsis also)



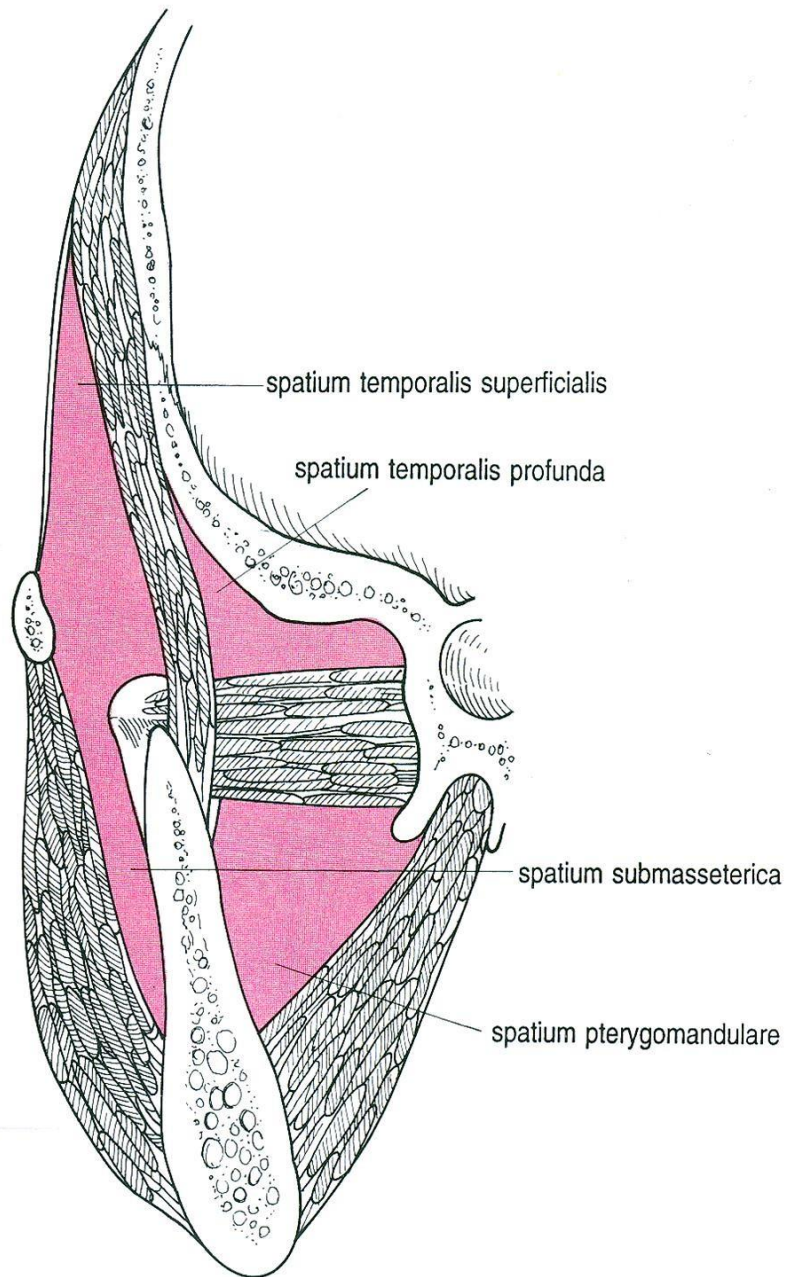






# CONNECTIVE TISSUE SPACES I. SPACES OF THE MASTICATORY MUSCLES

- Spatium submasseterica
- Spatium  
pterygomandibulare
- Spatium temporalis  
superficialis
- Spatium temporalis  
profunda
- Fossa pterygopalatina
- Fossa infratemporalis



# CONNECTIVE TISSUE SPACES II.

## SPACES OF THE FLOOR OF THE MOUTH

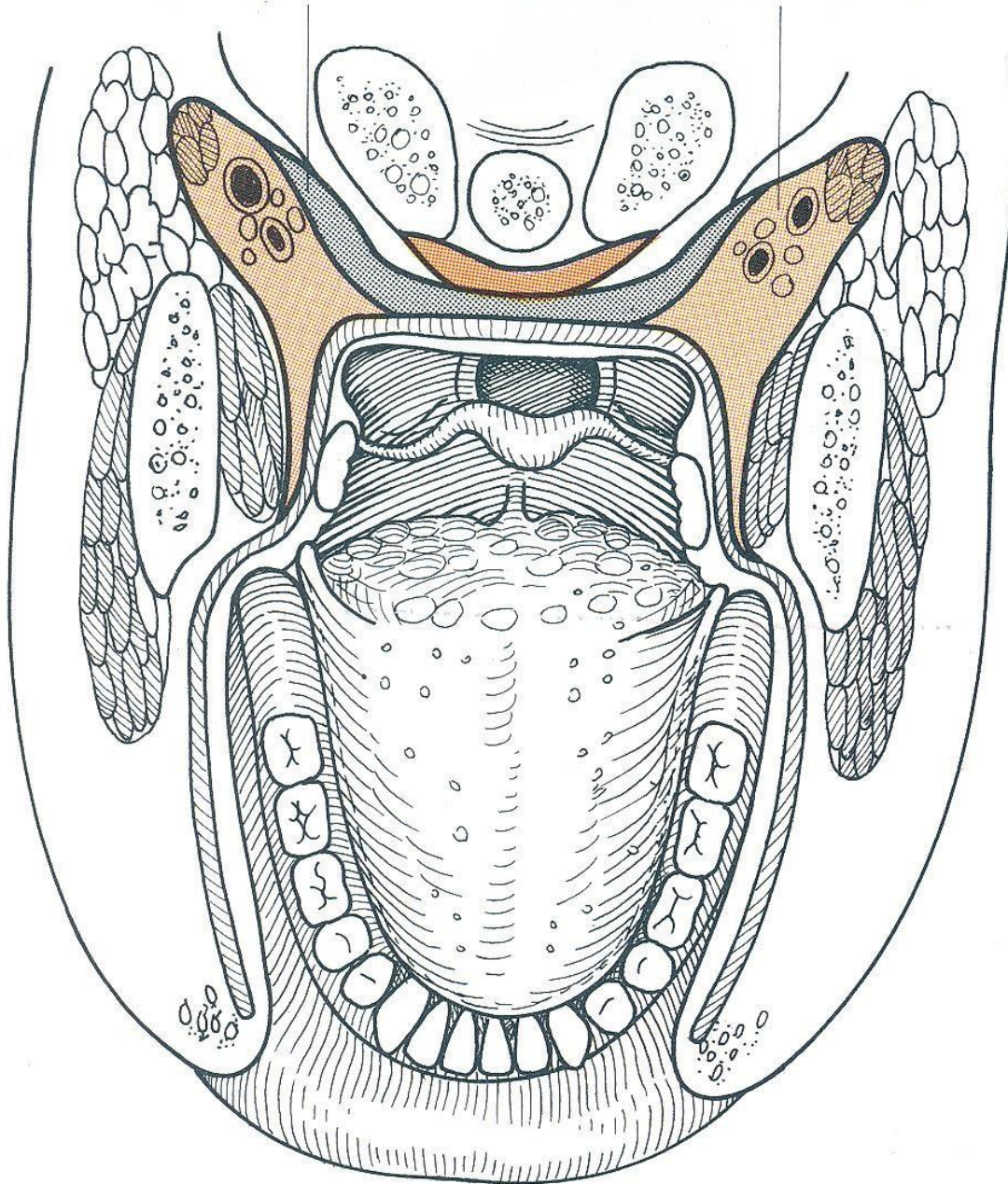
- Spatium sublinguale
- Spatium submandibulare
- Angina Ludowici (bilateral cellulitis which involves both the sublingual and the submandibular spaces)

# CONNECTIVE TISSUE SPACES III. OTHER SPREADING DIRECTIONS

- Perimandibular cellulitis
- Spatium buccale
- Fossa retromandibularis
- Spatium para-,  
retropharyngeale
- Spatium praevertebrale

spatium praevertebrale

spatium retro- vagy parapharyngeale



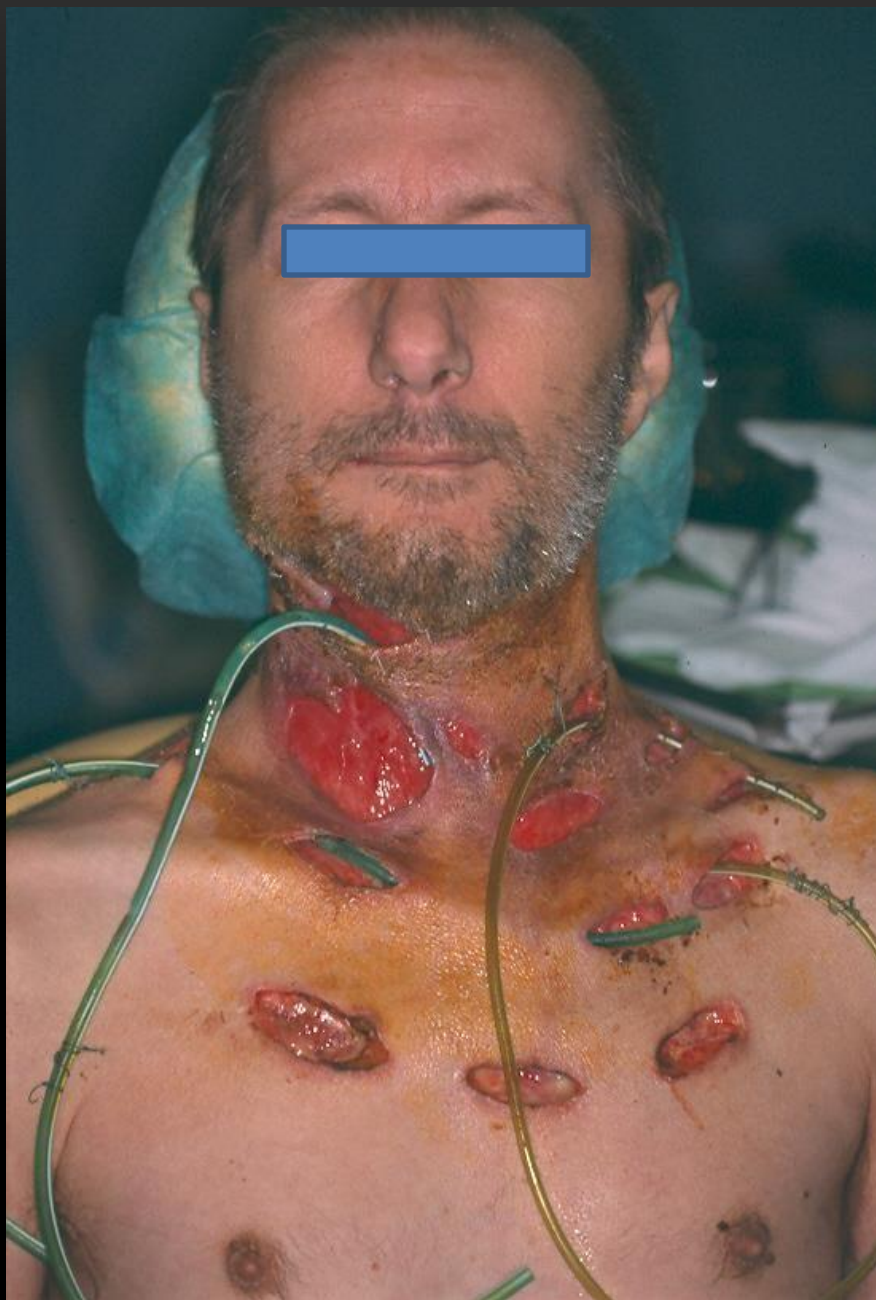


# CELLULITIS

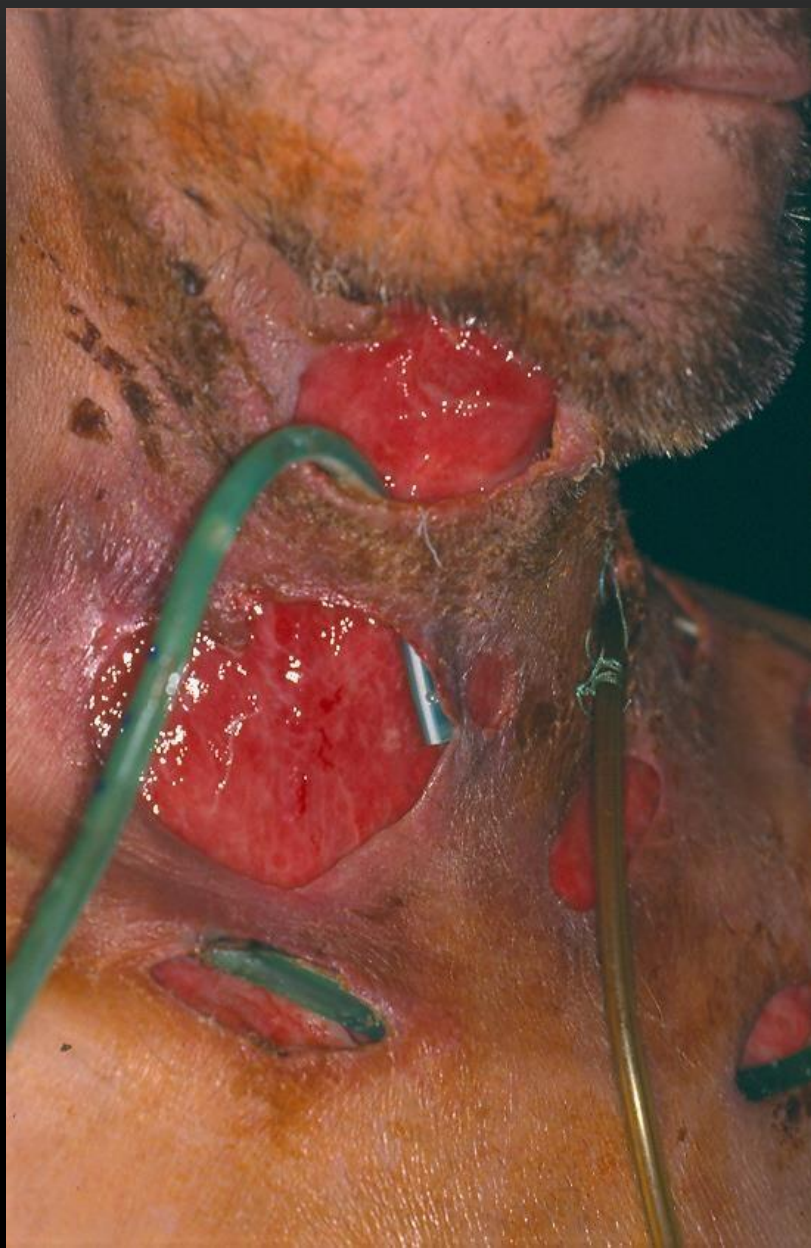
## II.

## TREATMENT

- T Wide, multiple incisions, drainage, cleaning with Betadine
- Massive antibiotic treatment (broad spectrum - Avelox)
- Intensive care (if necessary)
- Consultation with chest surgeons and neurologists







# OSTEOMYELITIS

- Osteomyelitis acuta
- Osteomyelitis chronica purulenta
- Osteomyelitis sclerotisans focalis
- Osteomyelitis sclerotisans diffusa
- Osteoradionecrosis
- BRONJ



# SIGN

S

- Swelling
- Fever
- Pain
- Mouth closure
- Fistule
- Sequestration
- X-ray

# TREATMENT

- Conservative: antibiotics (Clindamycin!) in high dose, for a long time (6 weeks), or by antibiogramms
- Surgical: removal of bone sequestrs, decortication, bone resection, local antibiotic treatment (Gentamycin chain)

# BRONJ (BISPHOSPHONATE RELATED OSTEONECROSIS OF THE JAW) I

- Bisphosphonates:

- Pamidronate (Aredia)
- Alendronate (Fosamax)
- Ibandronate (Boniva)
- Risedronate (Actonel)
- Zoledronate (Zometa, Aclasta)
- Clodronate (Bonefos)

inhibit: osteoclasts,  
remodelling

- Others: denosumab,  
bevacizumab

- Osteoporosis:  
Medical uses:

- Bone metastasis (prostate cancer, breast cancer)
- Myeloma multiple

# BRONJ (BISPHOSPHONATE RELATED OSTEONECROSIS OF THE JAW) II

Clinical staging of BRONJ.

- At risk category: No apparent exposed/necrotic bone in patients who have been treated with either oral or intravenous bisphosphonates
- Stage 1: Exposed/necrotic bone in patients who are asymptomatic and have no evidence of infection
- Stage 2: Exposed/necrotic bone associated with infection as evidenced by pain and erythema in the region of the exposed bone with or without purulent drainage
- Stage 3: Exposed/necrotic bone in patients with pain, infection, and one or more of the following: pathologic fracture, extra-oral fistula, or osteolysis extending to the inferior border

# BRONJ (BISPHOSPHONATE RELATED OSTEONECROSIS OF THE JAW) III.

- Treatment:
  - Antibiotics:
    - 3 days before surgery and after further 2 weeks
    - penicillin > quinolones > clindamycin > metronidazole
  - Surgery:
    - atraumatic tooth extraction
    - sequestrectomy
    - mucoperiosteal cover of the bone



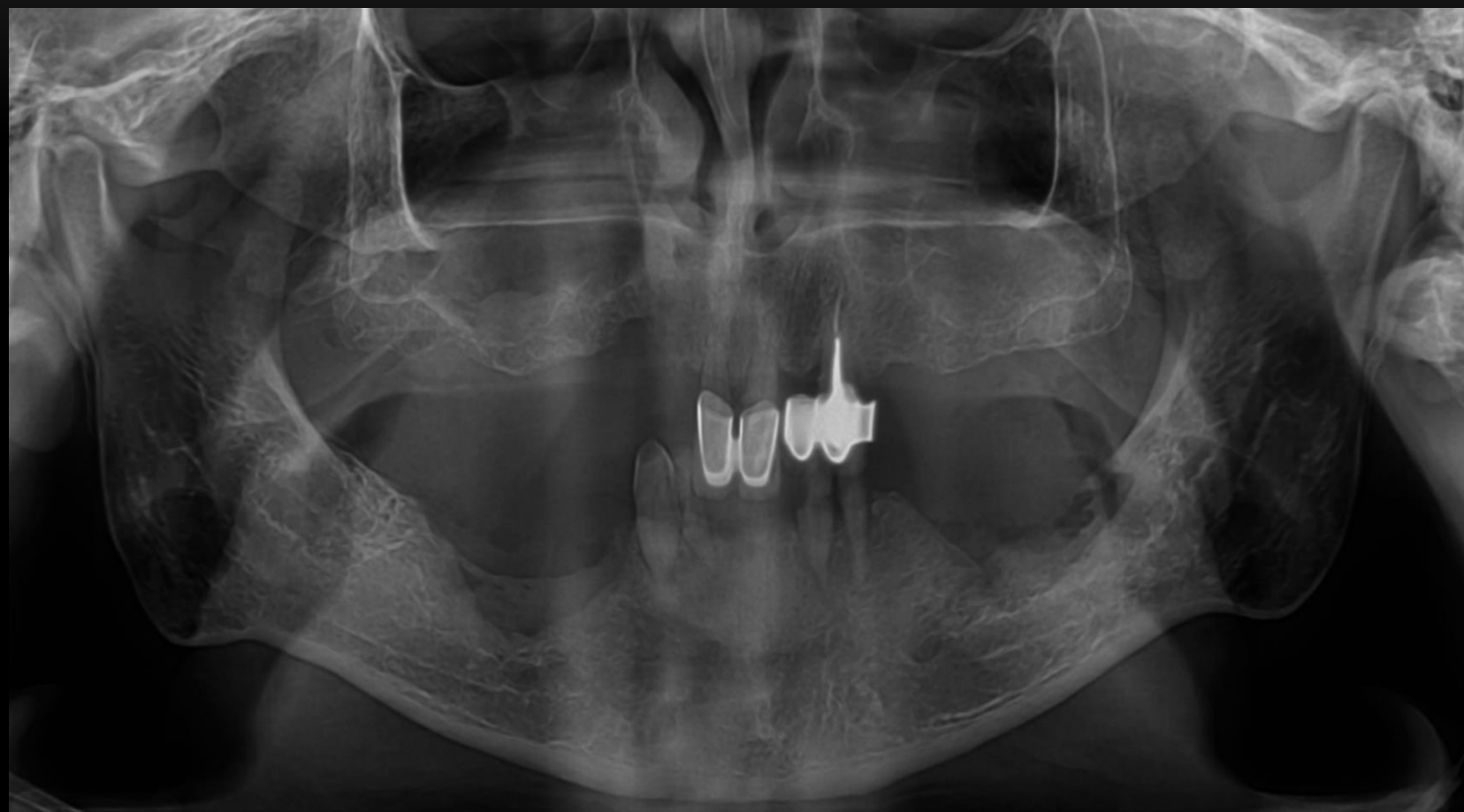






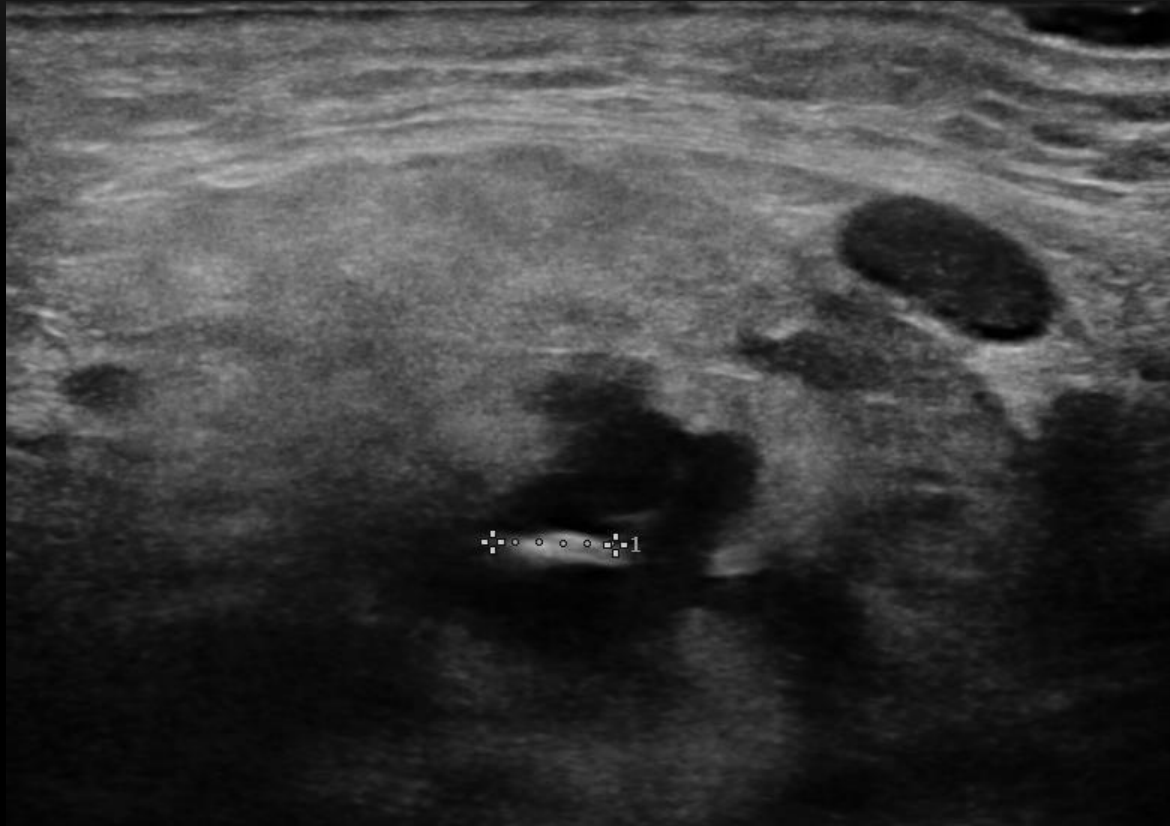






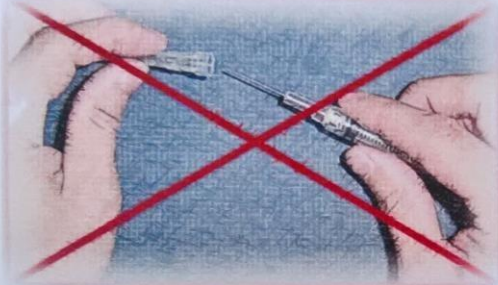






THANK YOU FOR YOUR  
ATTENTION !

# WORK SAFETY PROTECTION TRAINING



**3. Használat után a tű helye a merev falú gyűjtőedényben van.**  
(Ne kerüljön máshová / sárga zsák, papírkosár, stb./, mert könnyen baleseteket okozhat!)



rendelhetőek a